



WCDMA RF Subsystem

Conexant Delivers Highly Integrated RF Chipset for WCDMA Applications

Conexant offers a complete highly-integrated RF chipset to meet the needs of WCDMA terminal devices. The RF subsystem is designed and optimized for use in WCDMA and UMTS voice/data applications in the IMT-2000 frequency band. Conexant's WCDMA RF subsystem family includes Transmitter/Receiver (Tx/Rx) RFICs, Fractional-N Synthesizer, and a Power Amplifier Module. The WCDMA RF subsystem family, when combined with Conexant's GSM RF subsystem, provides a complete transmit and receive solution for dual-mode, tri-band, GSM/UMTS Terminals. Whether you plan to build a low-cost single-mode phone or a versatile GSM/UMTS handset, Conexant gives you the flexibility to choose the best solution. The chipsets work with a wide range of baseband ASICs.

The Conexant WCDMA RF Subsystem is compliant with the 3GPP terminal specifications. Furthermore, our RFICs come in compact land grid array (LGA) packages, resulting in a very small form factor. Conexant is the first supplier to commercialize this patented process for an RF package. This true chip-scale solution enables OEMs to produce smaller phones. This complete 3G solution is comprised of the following semiconductor products:

- CX74040 highly integrated super-heterodyne WCDMA transmitter
- CX74041 highly integrated super-heterodyne WCDMA receiver
- CX77115 WCDMA PCS 3 to 4 volt power amplifier (PA)
- CX74038 2.6 GHz/800 MHz dual fractional-N frequency synthesizer



Distinguishing Features

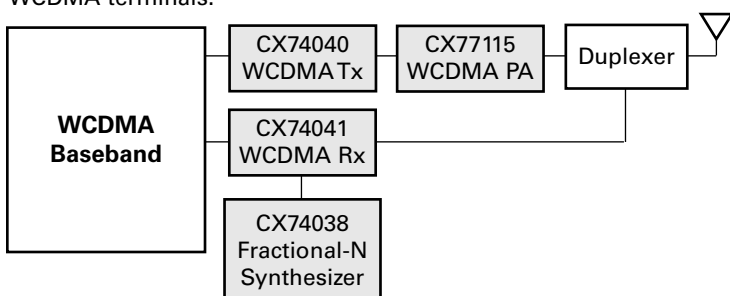
- Complete radio subsystem which meets 3GPP R99 requirements for WCDMA handsets
- High level of integration for cost-effective solutions
- Low power consumption
- Supports IMT-2000 frequency band

CX74040 WCDMA Transmitter

The CX74040 is a highly integrated super-heterodyne transmitter that incorporates all the active functional blocks required for implementing the transmitter up to the power amplifier. It is based on the super-heterodyne transmitter architecture. The transmitter is designed to meet the demanding WCDMA 3GPP specifications while consuming the lowest possible current. The transmit path consists of the I/Q modulator, variable gain amplifier (VGA), Image reject upconverting mixer, and driver amplifier. The CX74040 also integrates the UHF and VHF synthesizers for the transmitter.

CX74041 WCDMA Receiver

The CX74041 is a highly integrated super-heterodyne receiver that incorporates all the active components required to implement a WCDMA receiver. The CX74041 includes an LNA bypass feature for better operation at the higher signal strengths associated with many of these applications. The noise figure, gain and third order input intercept point (IIP3) of each stage in the receiver chip are optimized to meet the system requirements for WCDMA terminals.



WCDMA system block diagram

CX77115 WCDMA Power Amplifier

The CX77115 power amplifier is designed for 1920 to 1980 MHz WCDMA handset applications. The high spectral linearity and power-added efficiency requirements of a WCDMA handset amplifier are simultaneously met at output powers up to 26.5 dBm. A single gallium arsenide (GaAs) MMIC contains all active circuitry in the module. The output match is realized within the module package to maximize the amplifier's power output and efficiency. The CX77115 is manufactured to operate efficiently and linearly without negative DC voltages. Primary power supply can come from a three-cell nickel cadmium battery, a single-cell lithium ion battery or other suitable batteries in the 3 to 4 volt range.

CX74038 Dual Fractional-N Frequency Synthesizer

The CX74038's RF/main and IF/auxiliary synthesizers operate at up to 2.6 GHz and 800 MHz respectively. The synthesizer meets the fast settling time requirements for compressed mode of operation, while also meeting the low power consumption requirements of terminal applications. The CX74038's ultra-fine frequency step size (down to 10 Hz) makes it adaptable for multimode/multiband operation. Additionally, the ultra-fine frequency step size can be utilized for frequency drift compensation.

Product Features

CX74040 WCDMA Transmitter

- Based on super-heterodyne transmitter architecture
- Meets WCDMA 3GPP transmit specifications
- Integrates the UHF and VHF synthesizers for the transmitter

CX74041 WCDMA Receiver

- Meets WCDMA 3GPP receive specifications
- Integrated LNA with bypass architecture
- VCO on/off control for standby current optimization
- 6 x 6 mm RF Land Grid Array (RF-LGA™) package with down-set paddle

CX77115 WCDMA PA

- Low voltage positive bias supply
- Good linearity
- High efficiency
- Large dynamic range
- 6-pin LCC package (6 x 6 x 1.5 mm)
- Power down control

CX74038 Fractional-N Synthesizer

- 2.6 GHz maximum operating frequency
- 800 MHz maximum IF synthesizer
- Supply voltage as low as 2.6V
- Fast frequency settling time with fractional-N operation, meeting 3GPP compressed mode operation requirements
- Internal fractional spur reduction

www.conexant.com

General Information:

U.S. and Canada: (800) 854-8099

International: (949) 483-6996

Headquarters – Newport Beach

4311 Jamboree Rd, P.O. Box C

Newport Beach, CA 92660-3095

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